REMARKS

Changes have been made to the specification to correct typographical errors and to maintain consistency throughout the application with respect to the identification and naming of components of the various figures in the application. No new matter has been added.

The Final Office Action mailed January 31, 2006, has been received and reviewed. Claims 1 through 20 are currently pending in the application. Claims 1 through 20 stand rejected. Applicant proposes to amend claims 1 through 12, and respectfully requests reconsideration of the application as proposed to be amended herein.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 4,561,009 to Yonezawa et al.

Claims 1 through 3, 5 and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Yonezawa et al. (U.S. Patent No. 4,561,009). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 1, an independent claim from which claims 2, 3, 5, and 12 depend, is not anticipated by Yonezawa et al. because Yonezawa et al. fails to expressly or inherently describe all of the recitations of amended claim 1. The failure of a reference to describe "each and every element" of a claim as set forth in the claim precludes an anticipation rejection under 35 U.S.C. § 102(b). *See, Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicants propose amending claim 1 to further define the at least one side surface of the resistive layer. As amended, claim 1 is not anticipated by Yonezawa et al. The Final Action alleges that the side surfaces of Yonezawa et al. which anticipate claim 1 are the side surface interfaces between the PSG layer (31) and alumina layer (33) located at the edge of an opening therein through which an electrode (32) is exposed as illustrated in Figure 9B of Yonezawa et al. However, the at least one side surface of the resistive layer as recited in claim 1 is a side surface formed by the extension of the resistive layer over at least a portion of one or more side surfaces of an elongated conductive structure, not side surfaces formed by an opening through a PSG layer (31) and alumina layer (33). The side surfaces allegedly illustrated in Figure 9B of Yonezawa et

al. do not correspond to the at least one side surface recited in claim 1; particularly in light of the further definition of the side surfaces found in amended claim 1. Yonezawa et al. fails to describe a side surface of a resistive layer as recited in amended claim 1 and does not describe an insulative layer "having an outer edge substantially aligned with at least one resistive layer side surface" as recited in amended claim 1. The lack of such description precludes an anticipation rejection under 35 U.S.C. § 102(b) because each and every element of amended claim 1 is not described by the cited reference. *See, Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Claim 1 is also amended to include the recitations "wherein the column line structure is positioned between a substrate and a dielectric layer." These recitations further define the positioning of the recited column line structure in a cathode assembly of a field emission device. Yonezawa et al. does not describe a column line structure that "is positioned between a substrate and a dielectric layer" as recited in amended claim 1. Thus, Yonezawa et al. fails to anticipate amended claim 1. *Id.*

Claims 2, 3, 5, and 12 depend from amended, independent claim 1. As dependent claims, claims 2, 3, 5, and 12 inherit all of the recitations of claim 1 from which they depend. The failure of Yonezawa et al. to describe each and every recitation of claim 1 precludes an anticipation rejection of dependent claims 2, 3, 5, and 12.

Applicants respectfully request entry of the amendments to claim 1 and the withdrawal of the 35 U.S.C. § 102(b) anticipation rejection of claims 1-3, 5, and 12 based upon Yonezawa et al. for at least the foregoing reasons.

Anticipation Rejection Based on U.S. Patent No. 5,594,297 to Shen et al.

Claims 8 through 11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Shen et al. (U.S. Patent No. 5,594,297). Applicant respectfully traverses this rejection, as hereinafter set forth.

The anticipation rejection of claim 8 alleges that insulating layer (70) of Shen et al. anticipates the insulating layer recited in claim 8. However, Shen et al. describes an FED device that is similar to conventional FED devices and which are described with respect to Figure 1 of the application, which devices do not include the insulating layer recited in claim 8. In

particular, the device described by Shen et al. includes a column line structure having column conductors (20) formed on an insulating substrate (30), a resistive layer (40) disposed over the column conductors (20), an insulating layer (70) disposed over the resistive layer (40) and conductive layers (60) disposed over the insulating layer (70). The insulating layer (70) of Shen et al. is identical to dielectric layer 20 illustrated in Figure 1 of the application, which describes a conventional FED device. If the structure of Shen et al. is compared to an inventive FED device as illustrated in Figure 2 of the application, the insulating layer (70) appears to be equivalent to the dielectric layer 114. Thus, Shen et al. does not describe the insulating layer 110 as illustrated in Figure 2 of the application.

Applicant proposes to amend claim 8 herein to include the recitations "and wherein the column lines and the insulating layer are positioned between a substrate and a dielectric layer." The proposed amendments are supported by the specification and drawings and help to distinguish the structure recited in claim 8 from the conventional FED device structure disclosed by Shen et al. The proposed amendment to claim 8 clearly recites that an insulating layer overlies the column lines and that the column lines and insulating layer are positioned between a substrate and a dielectric layer.

The structure of Shen et al. positioned between the substrate (30) and the dielectric layer (70) includes column conductors (20) and a resistive layer (40). Shen et al. does not describe an additional insulating layer disposed over the resistive layer (40) and column conductors (20) which is positioned between a substrate (30) and dielectric layer (70). Therefore, Shen et al. fails to describe each and every recitation of claim 8. The failure of Shen et al. to describe the additional insulating layer precludes an anticipation rejection under 35 U.S.C. § 102(b) because an anticipation rejection may only be maintained if each and every element of a claim is described in a single prior art reference; which, in this case, claim 8 is not so described by Shen et al. *See, Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Applicant respectfully requests the withdrawal of the 35 U.S.C. § 102(b) anticipation rejection of claim 8.

Claims 9 through 11 depend from claim 8. As dependent claims, each of claims 9 through 11 inherit the recitations of claim 8. Shen et al.'s failure to anticipate claim 8 also

precludes the anticipation of dependent claims 9 through 11. Therefore, Applicant respectfully requests the withdrawal of the anticipation rejection of claims 9 through 11.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 4,561,009 to Yonezawa et al. in View of U.S. Patent No. 5,521,461 to Garcia

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yonezawa et al. (U.S. Patent No. 4,561,009) in view of Garcia (U.S. Patent No. 5,521,461). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 6 depends from nonobvious independent claim 1. As detailed *supra*, claim 1 is not anticipated by Yonezawa et al. As a dependent claim of a nonobvious independent claim, claim 6 is also nonobvious. *See*, M.P.E.P. § 2143.03 (citing, *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)(if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious)). Applicant respectfully requests the withdrawal of the 35 U.S.C. § 103(a) obviousness rejection with respect to dependent claim 6.

Obviousness Rejection Based on U.S. Patent No. 4,561,009 to Yonezawa et al in View of U.S. Patent No. 4,855,636 to Busta et al.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yonezawa et al. (U.S. Patent No. 4,561,009) in view of Busta et al. (U.S. Patent No. 4,855,636) Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 7 is a dependent claim which depends from nonobvious independent claim 1. As a dependent claim of a nonobvious independent claim, claim 7 is also nonobvious. *See*, *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Applicant therefore requests the withdrawal of the 35 U.S.C. § 103(a) obviousness rejection.

Further, Busta et al. fails to teach or suggest an insulative layer of a column line structure having a thickness of about 1000 angstroms. The Final Action alleges that "Busta teaches an insulating layer for semiconductive emissive device being 1000 angstroms in thickness." However, the silicon nitride layer (50) taught by Busta et al., and relied upon as support for the rejection of claim 7, is not an insulative layer; rather, the silicon nitride layer (50) which is

approximately 1000 Angstroms thick is an oxidation barrier layer which "is removed" from the structure as described by Busta et al. at column 5, lines 47-57. The failure of Busta et al. to teach or suggest an insulative layer of a column line structure having the recited thickness precludes a combination of Busta et al. with Yonezawa et al. to make obvious dependent claim 7.

For at least the foregoing reasons, claim 7 is not obvious and Applicant respectfully requests withdrawal of the 35 U.S.C. § 103(a) obviousness rejection of claim 7.

Obviousness Rejection Based on Applicant's admitted Prior Art

Claim 1, 2, 4, 5, 8 through 17 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admission of prior art. Applicant respectfully traverses this rejection, as hereinafter set forth.

Independent claim 1 is amended herein to include the recitations "wherein the column line structure is positioned between a substrate and a dielectric layer." Applicant's admitted Prior Art fails to teach or suggest a column line structure as recited in claim 1 that is "positioned between a substrate and a dielectric layer." In particular, claim 1 recites a column line structure which includes "an elongated conductive structure; a resistive layer...and an insulative layer...." At most, Applicant's admitted Prior Art teaches a column line structure having a conductive structure and a resistive layer positioned between a substrate and a dielectric layer. An insulative layer as recited in claim 1 is not taught or suggested by Applicant's admitted Prior Art.

Although the Final Action alleges that the dielectric layer of Applicant's admitted Prior Art is an insulative layer, the proposed amendment of claim 1 clearly recites that the column line structure, including the insulative layer, is separate from the dielectric layer which overlies a column line structure. Thus, Applicant's admitted Prior Art fails to teach or suggest all of the recitations of amended claim 1. The lack of such teaching precludes a *prima facie* obviousness rejection of claim 1.

Claims 2, 4, 5, and 12 depend from independent claim 1. As dependent claims of a nonobvious independent claim, claims 2, 4, 5, and 12 are also nonobvious. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicant proposes to amend independent claim 8 herein. The proposed amendments to claim 8 further clarify the differences between the prior art FED device described by Applicant's

admitted Prior Art and illustrated in figure 1. In particular, claim 8 is amended to clarify that the field emission device recited in claim 8 includes column lines having an insulating layer disposed thereon wherein the column lines and insulating layer are positioned between a substrate and a dielectric layer. Applicant's admitted Prior Art, however, does not include the recited insulating layer. Instead, conventional FED devices include column lines having a resistive layer overlying a conductive structure wherein the resistive layer and conductive structure are positioned between a substrate and a dielectric layer.

The failure of Applicant's admitted Prior Art to teach or suggest an additional insulative layer overlying a column line and positioned between a substrate and a dielectric layer precludes a *prima facie* obviousness rejection. *See*, M.P.E.P. § 2142 (citing, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Claims 9, 10, and 11 depend from independent claim 8. As dependent claims of a nonobvious independent claim, claims 9, 10, and 11 are also nonobvious. *See*, *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Independent claim 13 recites, in part, "a plurality of column line structures...and a dielectric layer disposed over at least portions of the plurality of column line structures." The "plurality of column line structures" further comprises, in part, "an elongated conductive structure; a resistive layer disposed on a top surface of the elongated conductive structure...and an insulative layer disposed over a top surface of the resistive layer...." Thus, the dielectric layer recited in claim 13 overlies the insulative layer of the column line structures.

Applicant's admitted Prior Art, and namely Figure 1 of the application, does not teach or suggest that conventional column line structures include an insulative layer as recited in claim 13. Furthermore, Figure 1 does not illustrate a dielectric layer disposed over a column line structure comprising a conductive structure, a resistive layer, and an insulative layer as recited in claim 13. The failure of Applicant's admitted Prior Art to teach or suggest all of the recitations of claim 13 precludes a *prima facie* obviousness rejection. *See*, M.P.E.P. § 2142 (citing, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Applicant respectfully requests the withdrawal of the 35 U.S.C. § 103(a) obviousness rejection of claim 13.

Claims 14 through 17, and 20 depend from independent claim 13. As dependent claims of a nonobvious independent claim, claims 14 through 20 are also nonobvious. *See*, *In re Fine*,

837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Obviousness Rejection Based on Applicant's Prior Art in view of U.S. Patent No. 5,521,461 to Garcia

Claims 6 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's admission of prior art in view of Garcia (U.S. Patent No. 5,521,461). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 6 depends from independent claim 1 and claim 18 depends from independent claim 13. Independent claim 1 is amended herein and is not obvious. Independent claim 13 is also nonobvious for the reasons stated *supra*. As dependent claims on nonobvious independent claims, claims 6 and 18 are also nonobvious. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Applicant respectfully requests the withdrawal of the 35 U.S.C. § 103(a) rejections of claims 6 and 18.

Obviousness Rejection Based on Applicant's Admitted Prior Art in View of U.S. Patent No. 4,855,636 to Busta et al.

Claims 7 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's admission of prior art in view of Busta et al. (U.S. Patent No. 4,855,636). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 7 depends from independent claim 1 and claim 19 depends from independent claim 13. For at least those reasons stated *supra*, independent claims 1 and 13 are not obvious in light of Applicant's admitted Prior Art. As dependent claims of nonobvious independent claims, claims 7 and 19 are also nonobvious. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Furthermore, claim 7 and 19 each include recitations which are not taught or suggested by Applicant's admitted Prior Art or by Busta et al. Each of claims 7 and 19 recite, in part, that an "insulative layer has a thickness of about 1000 Å." Applicant's admitted Prior Art does not teach or suggest an insulative layer, let alone an insulative layer having the recited thickness. Busta et al. also fails to teach or suggest such recitations. Although Busta et al. may teach or suggest the use of an oxidation barrier layer that is about 1000 Å thick during the formation of a

semiconductor device, which oxidation barrier layer is later removed, Busta et al. does not teach or suggest an insulative layer as recited in claims 7 and 19. The lack of such teaching precludes a *prima facie* obviousness rejection. *See*, M.P.E.P. § 2142 (citing, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

For at least the foregoing reasons, claims 7 and 19 are not obvious and Applicant requests the withdrawal of the 35 U.S.C. § 103(a) obviousness rejection thereof.

ENTRY OF AMENDMENTS

The proposed amendments to claims 1 through 12 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search. Finally, if the Examiner determines that the amendments do not place the application in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

CONCLUSION

Claims 1 through 20 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

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Enclosures: Appendices A and B
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